REMARKS

Claims 1-16 are pending. Claim 13 has been amended to recite the phrase "during the polymerization reaction" which was inadvertently left out. Support for this phrase can be found in page 135, line 12. No new matter has been added by way of the above-amendment.

The following sections correspond to the sections of the outstanding Office Action.

I. Specification

The Examiner objects to the title of the invention for allegedly not being descriptive. In response, Applicants have amended the title as follows:

> Vinyl-Urethane Copolymers With Intermediary Linkage Segments Having Silicon-Oxygen Bonds and Production Methods Thereof.

As such, withdrawal of the objection is respectfully requested.

II. Claim objections

The Examiner objects to a misspelling in claim 16. Applicants note that the misspelling occurred in the printing of the present application. This misspelling is not in the official set of claims in PAIR. As such, Applicants have not taken any action in response to this objection.

III. Claim Rejections - 35 USC § 102

Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,426,158 to *Mueller et al.* Applicants respectfully traverse the rejection.

(III-A) Present invention

The present invention relates to:

> A vinyl-urethane copolymer comprising at least one vinyl polymer chain and at least one urethane polymer chain, the vinyl polymer chain being combined with the urethane polymer chain through the intermediary of a linkage segment having a silicon-oxygen bond.

The basic structure of vinyl-urethane copolymer of the present invention has a triad structure containing at least one vinyl polymer chain, at least one urethane polymer chain and a linkage segment having a silicon-oxygen bond. This polymer is referred to herein as a vinyl-urethane terpolymer.

We now briefly comment on the nomenclature used in the present specification. It is noted that for vinyl-urethane copolymers containing a Si-O bond-containing linkage segment, the copolymers can be referred to as either a "vinyl-urethane bipolymer" or a "vinyl-urethane terpolymer." A "vinyl-urethane bipolymer" can be distinguished from a "vinyl-urethane terpolymer" depending upon whether the Si-O bond-containing linkage segment is a low-molecular-weight Si-O bond-containing linkage segment (i.e., a bipolymer) or a high-molecular-weight Si-O bond-containing linkage segment (i.e., a terpolymer).

This classification, however, is conducted only for the sake of convenience. Specifically, there is the case where no significant difference can be found between some vinyl-urethane bipolymers and some vinyl-urethane terpolymers, and in this case, the copolymers can be classified as one of the two categories as appropriate or can be classified as belonging to the two categories (page 18, line 20 - page 19, line 10).

The urethane polymer chains in the vinyl-urethane copolymers are not specifically limited, as long as they are polymer chains comprising polymers having a urethane bond. Such polymers preferably have a urethane bond in their principal chain or skeleton (page 19, lines 10 - 14).

The vinyl polymer chains in the vinyl-urethane copolymers are not specifically limited, as long as they are polymer chains comprising polymers derived from a vinyl-containing monomer component (page 19, lines 22 - 25).

In addition, "Polyurethane chains (X1)" described in the example of the present application is characterized in that they are all aqueous dispersions containing hydrophilic groups.

(III-B) The polymer described in the cited reference (Mueller)

The Examiner asserts that Mueller discloses polymer compositions of the type described in claim 1 of the present invention and specifically cites Example 48. Applicants respectfully submit that Mueller describes compositions with silicon-substituted urethane monomers and methyl methacrylate as a vinyl component. In the preparation of Example 48, Muller discloses that:

> "The procedure of Example 45 is repeated using 5.00 g of the silicone-urethane formulation and 0.56 g (10%) of methyl methacrylate, containing 10 mg benzoin methyl ether. After curing the polyurethane at 80 °C. for three hours, the mold is exposed to UV radiation from a SYLVANIA Black-Lite-Blue lamp for 5 hours. A clear, highly wettable polymer is obtained."

In other words, the description in the reference is just a composition containing a siloxane-urethane polymer and a vinyl polymer component.

In particular, the technology of Mueller relates to compositions consisting of two components that form a compatible, interpenetrating polymer network. Typically, interpenetrating polymer chains are not chemically bonded to each other.

In other words, Mueller discloses a composition that consists of:

> (I) A polymer chain obtained by reacting an urethane prepolymer with a polyol compound, the polymer chain being a high molecular weight polymer chain, wherein the urethane prepolymer has an isocyanate (NCO) radical at a molecular end, and the polyol compound having a hydroxyl group and a polysiloxane as a main chain structure and
> (II) A polymer chain in which a vinyl polymer or a copolymer polymerizes (increases in molecular weight).

As noted in Example 48, the composition that consists of polymer chain (I) and polymer chain (II) is obtained by first forming the polyurethane-polysiloxane copolymer chain (I) with heat at 80°C for 3 hours, and only after the polyurethane-polysiloxane copolymer chain (I) is formed does Mueller polymerize the methyl methacrylate monomers by UV radiation. This interpenetrating network would not have the at least one vinyl polymer chain bonded to at least one urethane polymer chain **through** a linkage segment having a silicon-oxygen bond, as presently claimed.

Polymer chain (I) is taught in column 4, lines 65 to column 5, lines 5 of Mueller. Specifically, the di- or triisocyanate (B) or mixture of said isocyanates is reacted with approximately half the equivalent amount of the polysiloxane-polyalkanols of structure Al, A2 or A3 to form an isocyanate capped prepolymer, which is subsequently reacted with the remaining half equivalents of polysiloxane-polyalkanol to form the crosslinked

polysiloxane-polyurethane.

Accordingly, the polymer chain (I) made by this process seems to have following chemical structure:

Case 1: wherein the isocyanate monomer = IPDI (isophorone diisocyanate)

-OC(=O)NH-[isophorone backbone] - NHC(=O)-[polysiloxane backbone]-OC(=O)NH-[isophorone backbone]-NHC(=0) - [polysiloxane backbone]-

That is, in Case 1, the obtained polymer is "polyurethane" and "polysiloxane" at the same time.

Moreover, the polymer chain (I) and the polymer (II) basically have no linking point.

Even assuming that polymer chain (I) and polymer chain (II) will form a bond, the resulting compound will have the following structure which is different from the polymer chain of the present invention:

Case 2: linking of polymer chain (I) and polymer chain (II)

-[polyurethane having polysiloxane backbone]-[polyvinyl]-[polyurethane having polysiloxane backbone]-[polyvinyl]-

(III-C) Comparison between the present invention and the cited reference

The invention described in the cited reference obviously differs from urethane polymer used by the present invention, and does not adopt the composition of [vinyl chain - silicon containing spacer - urethane chain] like the present invention.

The cited reference teaches a composition containing the siloxane urethane polymer and the vinyl polymer, and the coupling scheme of three elements as required by the present invention is not disclosed therein.

As the MPEP directs, all the claim limitations must be taught or suggested by the prior art to establish a *prima facie* case of anticipation. See MPEP § 2131. In view of the fact that Mueller does not teach the composition of vinyl chain - silicon containing spacer - urethane chain as presently claimed, a *prima facie* case of anticipation cannot be said to exist. Reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the above remarks, it is believed that claims are allowable.

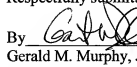
Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Garth M. Dahlen, Ph.D., Esq. (Reg. No. 43,575) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: January 29, 2009

Respectfully submitted,

By  #43575

Gerald M. Murphy, Jr.
Registration No.: 28,977
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant